What is claimed is:

1. An illumination optical system which illuminates an illumination surface with a generally telecentric illumination luminous flux, comprising:

at least one optical element,

wherein light intensity distribution of the illumination luminous flux on the illumination surface changes depending on a deviation angle of an incident ray with respect to a normal to the illumination surface,

wherein the optical element optically operates the illumination luminous flux such that a ratio of angle widths at which light intensity reaches half of a peak value in each of two axis directions orthogonal to each other on the illumination surface is an aspect ratio of 2:1 or higher.

2. The illumination optical system according to claim 1, wherein an angle width at which light intensity reaches half of a peak value in a first axis direction on the illumination surface is twice or more an angle width at which the light intensity reaches half of a peak value in a second axis direction orthogonal to the first axis direction.

3. An illumination optical system which optically operates an illumination luminous flux incident as a generally collimated luminous flux, comprising:

an optical integrator which performs splitting and

recombination on the illumination luminous flux in a first axis direction on a section generally orthogonal to a traveling direction of the illumination luminous flux; and

a light intensity conversion element which performs conversion of light intensity distribution of the illumination luminous flux in a second axis direction orthogonal to the first axis direction on the section.

4. The illumination optical system according to claim 3, wherein the illumination luminous flux has a finite outside shape and has generally Gaussian profile intensity distribution.

5. The illumination optical system according to claim 3, wherein the illumination optical system produces a luminous flux which has a generally rectangular outside shape on a section generally orthogonal to a traveling direction of the illumination luminous flux and produces generally uniform light intensity distribution in the area of the generally rectangular shape.

6. The illumination optical system according to claim 3, wherein the illumination optical system produces a luminous flux which has a generally rectangular outside shape on a section generally orthogonal to a traveling direction of the illumination luminous flux, and the light intensity conversion element provides a smooth change for light intensity distribution in the area of the generally rectangular shape.

7. The illumination optical system according to claim 6, wherein the light intensity distribution provided by the light intensity conversion element includes a higher light intensity toward an edge from the center of the area of the generally rectangular shape.

8. The illumination optical system according to claim 7, wherein the distribution including a higher light intensity toward an edge from the center of the area of the generally rectangular shape is provided for correcting a reduction in light transfer efficiency due to an aperture eclipse of a projection lens which projects a luminous flux emerging from the illumination optical system onto a projection surface.

9. The illumination optical system according to claim 3, further comprising a polarization conversion element which converts a luminous flux into linearly polarized light having a predetermined polarization direction in an optical path in a direction of integration by the optical integrator.

10. The illumination optical system according to claim 3, wherein the light intensity conversion element performs a shuffling operation on part of an incident luminous flux to reverse a central portion and a peripheral portion thereof.

11. The illumination optical system according to claim 3, wherein the light intensity conversion element is an afocal

optical system which provides distortion aberration for a pupil in a predetermined one-dimensional direction of an incident luminous flux.

12. A projection display optical system comprising:

the illumination optical system according to claim 1;

a spatial light modulation element which modulates a luminous flux emerging from the illumination optical system by a group of pixels arranged two-dimensionally; and

a projection lens which projects the luminous flux modulated by the spatial light modulation element onto a projection surface.

13. The projection display optical system according to claim 12, wherein the spatial light modulation element is one of a micromirror array device, a reflection type liquid crystal modulation element, and a transmission type liquid crystal modulation element.

14. The projection display optical system according to claim 12, wherein the spatial light modulation element is a reflection type liquid crystal modulation element, and the projection display optical system further comprising at least one polarization beam splitting element disposed in an optical path from the illumination optical system to the reflection type liquid crystal modulation element,

wherein a direction perpendicular to a direction in a splitting surface of the polarization beam splitting element

matches a direction in which an angle width at which light intensity reaches half of a peak value in the light intensity distribution is larger, of two axis directions orthogonal to each other on the illumination surface.

15. The projection display optical system according to claim 12, wherein the spatial light modulation element is a reflection type liquid crystal modulation element, and the projection display optical system further comprising at least one wavelength selective deviating element disposed in an optical path from the illumination optical system to the reflection type liquid crystal modulation element,

wherein a direction perpendicular to a direction in a deviating surface of the wavelength selective deviating element matches a direction in which an angle width at which light intensity reaches half of a peak value in the light intensity distribution is larger, of two axis directions orthogonal to each other on the illumination surface.

16. The projection display optical system according to claim 12, further comprising a plurality of transmission type liquid crystal modulation elements as the spatial light modulation element, and one of a wavelength selective deviating element and a deflecting direction selective deviating element which combines luminous fluxes modulated by the respective transmission type liquid crystal modulation elements and is disposed in an optical path from the plurality of transmission type liquid crystal modulation

elements to the projection lens,

wherein a direction perpendicular to a direction in a deviating surface by the deviating element matches a direction in which an angle width at which light intensity reaches half of a peak value in the light intensity distribution is larger, of two axis directions orthogonal to each other on the illumination surface.

17. A projection display optical system comprising:

the illumination optical system according to claim 3;

a spatial light modulation element which modulates a luminous flux emerging from the illumination optical system by a group of pixels arranged two-dimensionally; and

a projection lens which projects the luminous flux modulated by the spatial light modulation element onto a projection surface.

18. The projection display optical system according to claim 17, wherein the spatial light modulation element is one of a micromirror array device, a reflection type liquid crystal modulation element, and a transmission type liquid crystal modulation element.

19. The projection display optical system according to claim 17, wherein the spatial light modulation element is a reflection type liquid crystal modulation element, and the projection display optical system further comprising at least one polarization beam splitting element disposed in an optical path from the

illumination optical system to the reflection type liquid crystal modulation element,

wherein a direction perpendicular to a direction in a splitting surface of the polarization beam splitting element matches a direction in which the optical integrator performs the splitting and recombination.

20. The projection display optical system according to claim 17, wherein the spatial light modulation element is a reflection type liquid crystal modulation element, and the projection display optical system further comprising at least one wavelength selective deviating element disposed in an optical path from the illumination optical system to the reflection type liquid crystal modulation element,

wherein a direction perpendicular to a direction in a deviating surface of the wavelength selective deviating element matches a direction in which the optical integrator performs the splitting and recombination.

21. The projection display optical system according to claim 17, further comprising a plurality of transmission type liquid crystal modulation elements as the spatial light modulation element, and one of a wavelength selective deviating element and a deflecting direction selective deviating element which combine luminous fluxes modulated by the respective transmission type liquid crystal modulation elements and is disposed in an optical path from the plurality of transmission type liquid crystal modulation

elements to the projection lens,

wherein a direction perpendicular to a direction in a deviating surface of the deviating element matches a direction in which the optical integrator performs the splitting and recombination.

22. A projection type image display apparatus comprising:

a light source which emits an illumination luminous flux; and

the projection display optical system according to claim 12.

23. An image display system comprising:

the projection type image display apparatus according to claim 22; and

a screen which forms the projection surface,

wherein the screen allows observation of a projected image with one of divergent reflection light and divergent transmission light having predetermined directivity.

24. A projection type image display apparatus comprising:

a light source which emits an illumination luminous flux; and

the projection display optical system according to claim 17.

25. An image display system comprising:

the projection type image display apparatus according to claim 24; and

a screen which forms the projection surface,

wherein the screen allows observation of a projected image with one of divergent reflection light and divergent transmission light having predetermined directivity.